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Antonio A. R. Ioris

Addresses for correspondence:

School of Geosciences
University of Edinburgh
Drummond Street
Edinburgh, UK
EH8 9XP

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Abstract

One fundamental limitation of the contemporary debate over water institutional reforms has been the excessive concentration on scientific assessments and management techniques, with insufficient consideration of the underlying politics of decision-making and socio-economic asymmetries. This article examines the 'sociology of water regulation' to demonstrate how the implementation of the European Water Framework Directive (WFD) in Scotland is profoundly influenced by broader political and economic circumstances. The ongoing reforms of regulatory institutions became entangled in the reorganisation of a devolved Scottish Administration in the late 1990s, which has directly influenced the channels of representation and the overall decision-making processes. It is claimed here that, despite a discursive construction around sustainability and public participation, the new institutional landscape has so far failed to improve long-term patterns of water use and conservation. The article also analyzes how the exacerbation of the economic dimension of water management has permeated the entire experience, serving as a political filter for the assessment of impacts and formulation of solutions. The ultimate conclusion is that formal changes in the legislation created a positive space for institutional reforms, but the effective improvement of water policy and catchment management has been curtailed by political inertia and the hidden balance of power.

Keywords

Water institutions, water institutional reforms, WFD, Scotland, devolution

INTRODUCTION

The approval of new regulations on water management, such as the WFD, represents the latest step in a sequence of international reforms that started in the 1970s and, since then, have attempted to replace traditional approaches – largely based on rigid regulatory controls – with more flexible, adaptive and comprehensive responses to water management problems. [1] Instead of single purpose, engineering-based initiatives, governments and society are now expected to systematically address socio-economic and cultural aspects of freshwater extraction, effluent discharge and river alteration. The transition from old to new regulatory approaches is not without tensions and inconsistencies, which this article will explore by examining some legal and operational aspects of the Scottish experience. According to those responsible for the reforms, the implementation of the WFD has prompted a far-reaching renovation of policies, use and control of water in Scotland (Scottish Executive, 2006), because it is the first time that water use is comprehensively covered by a single piece of legislation.[2] It is important to mention that the new legislation still operates in tandem with common law controls

[1] For the purpose of this analysis, 'water regulation' is defined as the formulation and implementation of legal requirements and government policies; 'water management' is the application of methods and techniques for the use and conservation of water and related ecology.

[2] Previous regulation was mainly focused on point source discharge (under the 1974 Control of Pollution Act and subsequent amendments), with hydropower, water supply and navigation also covered by ad hoc Acts of Parliament and Control Orders.

(Clark, 2006), in particular, because there was no change regarding the ultimate ownership of water in Scotland (Allan, 2003).

Government agencies have praised the introduction of the WFD in Scotland – in 2003 – as a genuine opportunity to deal with the 'totality' of water environmental problems in a country that depends "socially, culturally and economically on the quality of our water environment". [3] Nonetheless, despite the historical importance of the ongoing water reforms, there are still scarce assessments of overall achievements and future trends of the Scottish experience as a result of the implementation of the WFD, with most authors remaining committed to the eulogistic tone of official documents and commissioned reports (e.g. Hanley and Black, 2006; Moran et al., 2007; or Morris and Morris, 2005). The consequence is a gap in the understanding of the effective possibilities and conflicts associated with the new regulatory regime in Scotland. There is, therefore, an authentic need for critical assessments at the national and sub-national level, all the more so because after the euphoria of the initial years before the WFD's approval (when uncertainties about its objectives due to ambiguities, questionable enforceability, and high compliance costs were already apparent; cf. Kallis and Butler, 2001), its operational contradictions are now becoming increasingly apparent in many parts of Europe (Steyaert and Ollivier, 2007).

The main objective of this article is to critically discuss the ongoing water reforms in Scotland, in view of relevant historical and sociological factors not generally included in more mainstream texts (such as the accounts recently provided by Futter et al., 2006; Hanley et al., 2006; and Ison and Watson, 2007). After a brief review of the institutional basis and conceptual shortcomings of the international experience on reforming water policy and management, three main areas of contention are analyzed. First, the issue of the increasing politicisation of water management associated with the introduction of more stringent regulatory objectives for water use and conservation. Water disputes in Scotland are uniquely associated with the redesigning of national administrative responsibilities and the reestablishment of a devolved parliament. Second, the article then critiques the selective involvement of stakeholders in the regulatory reforms, demonstrated by the ascendancy of some geographical areas or social groups over others less politically organized. Although public consultations and open meetings are meant to create democratic channels of communication between water stakeholders and decision-makers, in practice the implementation of the WFD in Scotland remains highly centralized and bureaucratic. Third, the fundamental limitation of the ongoing reforms is the difficulty to achieve a satisfactory operationalisation of the innovative aspects of the WFD, particularly because of the exacerbation of the economic dimension of water use. Finally, the text will argue that the barriers to implementing and operationalising the goals of the WFD are not only due to the Directive's complexity, but also reflect some limitations inherent in the water institutional reforms, and will suggest that more fundamental changes are required.

THE SLIPPERY LANDSCAPE OF CONTEMPORARY WATER REFORMS

The changes in water regulation currently taking place in many parts of the world are part of the emerging attempts to improve 'environmental governance' and remove unhelpful divisions between the state, market and local communities (cf. Lemos and Agrawal, 2006). The new regime of governance embraces concepts such as integration, adaptation, and sustainability, which have broadened the list of criteria to be considered in the decision-making process. It has expanded the agenda of water regulation, requiring that projects and programmes should now include not only physical and

[3] Scottish Government. Protecting Scotland's Water Environment at www.scotland.gov.uk/topics/environment/water/17316/9088 (accessed on 10 December 2007).

biological criteria, but should also equally consider the social and economic dimensions of water use and conservation. The novel mechanisms of environmental governance essentially revolve around the establishment, reaffirmation, or change of 'social institutions' (Paavola, 2007). Institutions, which can be defined as systems of prevalent social rules that structure social interactions (Hodgson, 2006), are complex systems, whose reproduction is incomplete, provisional, and unstable and which co-evolve with a range of other complex emergent phenomena (Jessop, 2001). Water institutions – such as property rights and management accountability rules – are subjective, path dependent, hierarchical, and nested both structurally and spatially, and embedded within the cultural, social, economic and political context (Saleth and Dinar, 2005; see also Conca, 2006). This means that the institutional reforms associated with water governance cannot be seen in isolation, but are directly associated with larger agendas of state reconfiguration, socio-economic or political disputes, and dominant values that reflect prevailing power structures and are legitimized in and by institutions (Cumbers et al., 2003). This inherent politics of water governance unfolds through a series of interlinked geographical 'domains', from everyday matters and sovereign state policies to interstate and global politics (Mollinga, 2008).

In spite of the contested nature of water governance and institutional reforms, most 'mainstream' texts still depict water regulation as politically 'unproblematic' or, at least, with only a secondary political dimension (Blomquist and Schlager, 2005). If the expanding literature on water regulation – including the acronyms MSP (multi-stakeholder platform), ICM (integrated catchment management) and IWRM (integrated water resources management), *inter alia* examined by Johnson et al. (1996), Warner (2005) and Conca (2006), respectively – has, to some extent, discussed the socionatural complexity of water problems, but most of the work under these concepts is restricted to empty exhortations for change in established practices and superficial adjustments in traditional approaches of water management. Where the contested nature of the reforms is acknowledged, it is still from a very managerial perspective, as if water politics were a kind of deviation from the purist purpose of water management (McCulloch and Ioris, 2007). As a result, the political dimension of water governance and the disputes around institutional water reforms remain largely undertheorized (Mollinga and Bolding, 2004). Due to ideological, operational and funding constraints, a large part of the 'mainstream' academic work has been associated with policy formulation and implementation, while ignoring 'the political' and 'sociological' features of water resources management (Mollinga, 2008). For instance, it is still limited in the international literature, the number of scholars disposed to call into question the responsibility for past environmental impacts (e.g. Bakker, 2002), to discuss the accountability for expectations, decisions and actions (e.g. Blomquist and Schlager, 2005) or the willingness to relate the unsustainable use of water with the uneven distribution of opportunities across social groups (e.g. Loftus, 2006). Most efforts are spent on fanciful computer models and assessment techniques instead of also dealing with the politico-economic causes of environmental impacts or with social asymmetries that lead to unfair allocation and unsustainable use of water. It should be pointed out that the reluctance to recognize the 'hydropolitics' of water management institutions is not exclusive to Scotland, but permeates the regulatory agenda in many parts of the world (Sneddon and Fox, 2006).

Most scholars miss the fact that the 'choreography' of the water reforms has primarily been influenced by conflicts of interest between governmental agencies and lobbying groups (as in the case of the WFD in Europe; cf. Kaika and Page, 2003). It is rare to find a critical assessment of the appropriation of common water resources by strong political and economic groups, at the expense of society at large (e.g. Swyngedouw, 2004). The mainstream version of water governance leaves little room for inquiring into distortions in the allocation and use of water, or for assessing the political game behind public funds (many times apportioned for the benefit of small private groups). The political shortcomings of the conceptualisation of the international water reforms are demonstrated by the failure to notice the biased mechanisms created for involving the

public in the decision-making process. In most countries, the public forums of debate have been contained by sectoral interests and the rigid timetable of government strategies. It is indeed difficult to identify cases around the globe where those groups that historically controlled water allocation and use are not in control again of the implementation of supposedly novel water institutions. The consequence is that calls for participatory management and social learning are bound to translate into innocuous approaches in the face of the uneven balance of power and policy inertia.

The failure to address the 'sociology of water reforms' (or the 'political sociology of water resources management'; cf. Mollinga, 2008) has constituted a major barrier to the understanding of the limitations and possibilities of contemporary water governance. Because of the reluctance to engage with the underlying political disputes, interventions on hydrological systems tend to generate costs, benefits and risks that are distributed unevenly across spatial and temporal scales and across social groups (as pointed out by Molle, 2007). The fact that those social and spatial inequalities are seldom considered in the formulation and implementation of a new water regulation may be an indication of the geometries of power behind the ongoing institutional reforms. The main gap in most texts is to ignore that contemporary water reforms are profoundly connected, as an integral component, to the neoliberalisation of the economy advanced and championed by the state itself (Potter and Tilzey, 2007). Likewise, many aspects of the prevailing responses to environmental degradation, such as the fashionable theory of ecological modernisation, also serve as new paths to capital accumulation (other than the traditional exploitation of natural resources), in which the conservation of nature is used as the 'substrate' of commercial transactions (Smith, 2007). The realisation of the inescapable political dimension of institutional water reforms should, therefore, be the entrance point to understanding how differences between social groups and spatial areas have influenced governmental action and the accommodation of conflicting interests, without necessarily achieving the best solution in terms of environmental conservation and satisfaction of social demands. Moving from the generic to the specific, the discussion of the Scottish experience will illustrate the limitations and intricacies of contemporary water reforms. It will focus on the political dimension of the institutional water reforms, an issue that is still not sufficiently acknowledged in Scotland.

'DEVOLUTION', THE WFD AND THE POLITICISATION OF WATER

In any country, the introduction of a new water regulation involves the identification of (old and new) management problems, the development of specific policies, and the prioritisation of responses, which all necessarily require some form of political negotiation and intersectoral compromise. For instance, the implementation of the WFD in Europe has been responsible for a growing politicisation of water regulation, associated with increasing controversy about the best way to accommodate conflicting interests regarding water allocation, use and conservation. Because of the significant costs involved in restoring the ecological condition of water bodies – what is even more complicated in the overdeveloped and highly populated parts of Europe - there was a lengthy negotiation between the state, market and civil society for the approval of the new Directive (Page and Kaika, 2003), which added to a prolonged bickering between the European Parliament and the Council of Ministers, intermingled with the pressures of different interest groups and NGOs (Kaika and Page, 2003).

In Scotland, this overall context of disputes and politicisation has been further fuelled by the reinstallation of a semi-autonomous parliament and executive government (a process normally called 'Devolution') in 1999, which coincided with the late stages of preparation

and final approval of the WFD.[4] After nearly three centuries of united history, since the Treaty of Union in 1707, a Scottish Administration now regained control over a range of public matters, including overseeing the implementation of the WFD in one-third of the British territory (i.e. the area of Scotland in the UK). The movement for Scottish self-determination is not new and has evolved over the past decades in an interlocked process of identity definition and fierce struggle for economic recovery (Beveridge and Turnbull, 1997). In effect, Scotland had suffered more than other parts of the UK due to problems such as declining population, emigration, unemployment, and extensive foreign ownership of local businesses (Danson, 1999; Danson and Gilmore, 2000; Gripaios and Bishop, 2005; McCrone, 2001), issues that politicians have repeatedly used as compelling arguments in favour of home rule (i.e. Devolution).[5] In this context, questions related to water management are only some among many areas where Devolution still remains an incomplete process (Bradbury and Mitchell, 2005; Keating, 2002, 2005), fraught with overlaps and uncertainties. For instance, in the case of energy generation (such as hydropower that accounts for 10% of Scottish electricity), public policies on energy are still a prerogative of London but the authorisation to build new schemes (under the planning permission regime) are decided in Edinburgh or by local authorities.

The water institutional reforms in Scotland have become intertwined with the reaffirmation of the 'Scottish myth' (cf. McCrone, 2001) at times, which is one of the ideological pillars of the movement for political Devolution. According to the 'myth', there is an inherent egalitarianism among the Scots and the nation is "portrayed as a more egalitarian country (than England, at least) in which people relate to each other on the basis of merit rather than status", reflected in the verse "*A man's a man for a' that"* by Robert Burns, which was chosen, significantly, to be sung at the official opening of the Scottish Parliament in July 1999 (McCrone, 2001). Such claims are in direct contradiction with a highly unequal society that has failed to ensure minimal levels of a decent life to all its members (e.g. one child out of three lives in poverty; cf. Dunion and Scandrett, 2003) and has suffered from long-standing schisms (e.g. splits between Highlands and Lowlands, west and east, urban and rural, Protestants and Catholics, which all conspire to dissipate the Scottish national identity; cf. McCrone, 2001). These broader social divisions have - directly and indirectly - affected the course of the ongoing water reforms, which is demonstrated by the fact that influential groups of water users (see concrete examples from hydropower and water supply in the next section, *Public Participation and Public Perception*) and stronger economic regions (in particular, the wealthier neighbourhoods and more industrialized areas in the Central Belt, in the southeast and on the east coast that constitute the priority location for investments in pollution reduction and river restoration) have been able to exert sustained pressures in decisive moments of implementation of the WFD.

It is worth observing that the historical coincidence between the WFD and the reinvention of the Scottish Administration facilitated the convergence of water regulatory reforms with the broader reorganisation of public affairs. There are significant historical parallels between political Devolution and institutional water reforms. Devolution and the WFD are

[4]Political 'Devolution' is effectively a compromise between centralisation and independence, which produced a plurinational political arrangement that is neither a federation (i.e. there is no English parliament), nor a unitary system (some parts of the country now benefit from devolved powers). For some authors (e.g. Paterson, 1994: 181), the creation of the Scottish Office in 1885 created an early 'bureaucratic form of national government' because it already provided Scotland with a semi-autonomous administration.

[5] Likewise, politicians frequently try to associate Devolution with the Scottish Enlightenment, a period in the 18th century when Scotland shined as a centre of intellectual excellence: for example, a previous First Minister described political Devolution as "the 'front line' of radical constitutional change taking place in the UK" which will (allegedly) allow Scotland to regain its former glory of the European Enlightenment (cf. Scottish Executive News Release, 1998).

obviously independent but also clearly associated processes, what is normally described by critical realists as a 'contingent interaction' of specific causal chains in a certain context. To be sure, the reorganisation of environmental governance in Scotland was initiated a few years before Devolution with the approval of the Environment Act in 1995, which amalgamated various River Purification Boards under the Scottish Environment Protection Agency (SEPA). The creation of SEPA was already a response to the changing landscape of environmental regulation in Europe that came to require a more proactive role from public organisations. Administrative reforms in the water sector included the consolidation of the water industry into a single public utility (Scottish Water) in 2002, in which the same principles of administrative rationalisation and cost reduction used to justify the creation of SEPA were invoked. At the same time as the public sector was being transformed, Scottish representatives were heavily involved in the negotiation of the new Water Directive, in particular, because the last chairman of SEPA (Sir Ken Collins; in office between 1999 and 2007), then a Scottish Member of the European Parliament, was in charge of the Environment Committee of the European Parliament and strongly supported the consolidation of European legislation into a single, comprehensive directive (Jordan, 2000).

The transition from a previously centralized UK Government to a 'devolved' Scottish Administration has indeed had important material and symbolic consequences for dealing with water problems in Scotland. Before Devolution, it was significantly more difficult to reform Scottish law due to a shortage of parliamentarians' time (in Westminster) and the restricted importance of Scotland issues in the UK political arena. This changed after 1999, when the new Scottish Parliament was able to mobilize time and resources for a comprehensive review of the water legislation. More than merely a historical coincidence, the fact that Scotland was the first region in Europe to translate the WFD into national legislation (sanctioned under the Water Environment and Water Services Act in 2003, ahead of the official deadline; cf. Allan, 2003) reveals the political importance given to the water institutional reforms. In a short period of time (between 2005 and 2006), more than 7000 water use authorisations were issued by SEPA, ranging from simple to complex registrations, and multi-site licences. As claimed by the Scottish Government (2008: 06), "Scotland is at the forefront of influencing European policy on implementing the WFD, playing an important role in a range of working groups established by the European Commission".

Crucially, the new parliament not only managed to produce a thorough legal reform that in some aspects goes beyond the requirements of the WFD (such as conservation objectives of coastal waters up to three nautical miles and the introduction of specific requirements to identify and monitor pressures and impacts in wetlands), but it also benefited institutionally from the political significance of having to translate the WFD into national legislation. In other words, the priority given to the WFD by the Scottish Parliament was not only a chance to improve water legislation, but also contributed to the very affirmation of the newly 'devolved' parliament. In fact, the early approval of the WFD was praised as a demonstration that Scotland can do things 'faster and better' (i.e. than the rest of the UK). Similarly, it has been repeatedly affirmed that, unlike in England, the "implementation of the WFD in Scotland has been both timeous and systematic" and, because of that, "Scotland has been at the forefront of the European process" (Hendry, 2006).

PUBLIC PARTICIPATION AND PUBLIC PERCEPTION

In articulating a sense of national pride around the forthcoming water legislation, the young Scottish Administration systematically attempted to ascertain its authority by forging a range of channels with the main water user sectors. Nonetheless, while the involvement of some groups of stakeholders played an important role in shaping the new legislation, it did not necessarily result in stronger democratic representation or better environmental governance. On the contrary, lobbying and bargaining around the

adoption of the WFD have exposed a highly controlled process of public involvement and stakeholder contribution. Ison and Watson (2007) show how the approval of the new law was basically the product of a handful of officers from the Scottish Government and parliamentarian advisers, who worked closely with three representatives of NGOs (known at that time as the 'three witches'), with wider consultations coming only later in the process and, crucially, when most decisions had already been made. The selective basis of participation continued throughout the implementation of the WFD in Scotland, especially because the main institutional mechanism for involving the public has been the public consultation. The obvious weakness of consulting the public via formal consultations is that official agencies have ample discretion to accept or reject any suggestion received through the process.

Since the early years of the new legislation, there has been a persistent difficulty to genuinely consider the inputs of stakeholders and local demands. For example, the design of the River Basin Districts, which are the administrative units of the new regulation, involved a series of meetings in different parts of Scotland in 2003. Nonetheless, while the public seemed to favour a format of River Basin Districts that coincided with catchment boundaries, decision-makers preferred to group totally unrelated catchments under the same district area. At that point most of the public also insisted, to no avail, on a more flexible and realistic timetable to implement the new Directive, which would have enabled more time for raising awareness and debating water problems. With extra time available, a number of local initiatives, such as catchment and stakeholder mobilisation schemes that existed throughout Scotland, could have better informed the preparation of the coming regulation. Likewise, some significant experiences in terms of water use and conflict resolution, such as with irrigators in the West Peffer Burn catchment, close to Edinburgh, or the Loch Leven water system, in operation since the 14th century in the Fyfe area, were largely neglected in the design of the new regulatory framework. Accordingly, staff at the SEPA offices complains that the implementation of the new regime has been too centralized by the agency headquarters, which has given them little room to adjust the regulation to the local context.

In addition to public consultations and some ad hoc seminars, which happened especially between 2002 and 2005, the other opportunities for involving the public in the debate have been related to the preparation of the River Basin Management Plans (the strategic decision-making process introduced by the WFD). The Plans are being discussed regionally by 10 Area Advisory Groups (AAG), which are the official forums of public debate and sectoral negotiation. Despite their democratic appearance, the activities of the AAGs include a series of meetings with a rigid timetable and little flexibility for unexpected, time-consuming controversies. AAG representativeness is further weakened by the fact that its membership is decided unilaterally by SEPA, and the role of its members has been informative rather than operational. In other words, the scope of AAGs in Scotland is basically restricted to fine-tuning the production of the River Basin Management Plans (RBMP), instead of really engaging with the decision-making process.[6] Our discussions with members of the AAG and analysis of the documentation, revealed increasing complaints that the RBMP experience in Scotland is, by and large, a 'tick on the box' exercise of the official agenda of the implementation of the WFD. There is clear frustration at the lack of willingness on the part of SEPA to share data and discuss internal technical procedures. For example, it is not entirely clear how the agency is assessing the individual and cumulative impact on the environment caused by different water users in the same area. Consequently, there is limited prospect for members of the AAG to influence how SEPA will deal with the mitigation of water management problems. Equally, it is also difficult to perceive a strategic thinking behind the preparation of the

[6] This is clearly stated in, for example, "River Basin Management Planning North East Scotland Area Advisory Group (AAG)". Meeting 27th June 2006, Aberdeen, at www.sepa.org.uk/pdf/wfd/rbmp/aag/ne/27jun06/minutes.pdf (accessed on 02 November 2007).

RBMPs, given that the focus has normally been on problems at the water body level and rarely at the catchment scale.

Although SEPA officers personally recognize the importance of forming partnerships with stakeholders, the instrumentalisation of such partnerships (Sherlock et al., 2004) has been conducive to the reproduction of an essentially technocratic form of public involvement. So far, the bureaucratized involvement of the public has created only limited opportunities for social learning or for the creative contribution from water stakeholders. Ison and Watson (2007) warn that those responsible for environmental policies in Britain have suffered from an inability to handle a 'system to manage sustainable development', focusing too much on water problems or 'WFD problems' and not enough on the broader and integrated scale of solutions. The inadequacy of conventional public participation approaches is also common in other parts of Europe, where decentralisation has been manipulated according to political interests without really moving European citizens much 'closer' to environmental regulation (Jordan, 2000). Nonetheless, it should also be acknowledged that the establishment of sound and democratic water governance constitutes a major challenge, in particular, because it requires solutions based upon information that is highly dispersed throughout society and held by groups with uneven political power. This further highlights the need to involve all interested parties, despite the difficulty to progress from public participation to an effective delegation of water management decision-making (cf. McCulloch, 2006).

It is crucial to realize that the very characterisation of problems and solutions, in Scotland as it is elsewhere, is always a highly contested issue. Once the new legislation was approved in 2003, a series of studies indicated that 28% of water bodies in the main area of Scotland (the Scotland River Basin District) were threatened by sources of pollution (specially due to collection and treatment of sewage, aquaculture, manufacturing, refuse disposal, and mining and quarrying), 27% by water abstraction or dams (due to electricity generation, public water supplies and agriculture) and 34% by morphological interventions (due to historical engineering, agriculture, electricity generation, urban development and land claim). This gives a total of 43% of water bodies at risk of not achieving the objectives of the Directive by 2015 (SEPA, 2005a; see also SEPA, 2007). In the cross boundary district between Scotland and England (Solway and Tweed River Basin District), the situation is even worse: 56% of water bodies are at risk (SEPA and EA, 2005; see also SEPA and EA, 2007).[7] The sombre tone of these official reports – which are still mostly based on the compilation of previous monitoring priorities or desk studies rather than on fieldwork assessments - is in striking disagreement with the general public's perception about the status of their local environment, a popular view that has been consistently identified in recent opinion surveys (e.g. Dalrymple, 2006; Martin, 2006; Scottish Executive, 2002). Despite conceding the existence of localized threats, the majority of the population insisted that Scotland has "good water quality and water quantity" (Murray and Myant, 2006). This apparent paradox between public perception and the technical assessments only makes the implementation of the new regulation more difficult, particularly in the face of the hierarchical and formalist nature of the dialogue between regulators and society. In any case, the alarming figures about the 'precarious' status of water in Scotland are probably serving to politically strengthen the implementation of the WFD, insofar as it reduces opposition and forces 'consensus' around regulatory targets.

At the same time that a significant effort is spent on trying to conform to the European legal requisites, water management problems continue to emerge in various parts of Scotland. For instance, in the Loch Tay area, in the southern Highlands, there is growing

[7] It should be noted that, using similar assessment methodologies, in the rest of Europe the figures can reach 80% of water bodies, which indicates that the legitimacy of the WFD is largely based on the portrayal of a widespread precarious condition of water bodies.

competition between hydropower developers, local water supply operation, and environmental conservation objectives. This conflict has been recurrent in various applications to build new hydropower schemes in the Perthshire area, where the uncertainties related to the implementation of the new regulatory regime, together with the inconsistencies between planning development and water regulation, have created uneasiness among local and national stakeholder groups. Given the current policy of the Scottish Government in favour of small and medium size hydropower schemes, this kind of dispute is likely to increase. Similar contentions exist between sites affected by the construction of new dams (especially for urban water supply and hydropower) and the remote areas expected to benefit from additional electricity and public water supply. It is worth mentioning the existence of an intricate network of pipelines in the Highlands of Scotland that serve to transfer water from one catchment to the other. Decisions on the management of these multi-site schemes only add a new layer of complexity to an already complicated regulatory regime. Likewise, in the catchments shared between Scotland and England, water management has become entangled in a not always easy communication between public agencies to the north and south of the English border. The sub-national experience of the WFD in Scotland can be compared here with other devolved administrations in Europe, such as in the Lower Saxony, where the implementation of the new Directive has depended on a series of contextual and contingent inter-regional issues within the nation-state (Kastens and Newig, 2007).

So far, the influence of the stronger players on the implementation of the WFD in Scotland has clearly thwarted the more innovative prospects of the new regulatory regime, such as the modification of the overall pattern of wasteful water use by households and business sectors. The largest water users - above all, hydropower and public water companies – have constantly exerted their political leverage to shape public policy in order to maintain business interests and ensure that everything unchanged. The liability for environmental damages, such as in the case of whisky distilleries that diverted entire streams to serve their water needs, is systematically denied with the claim that economic results are more important than trying to restore river systems. The stronger sectors have even managed to secure an exclusive agenda of discussions with the regulatory agency (for example, operational adjustments coordinated between SEPA and Scottish Water called 'Quality and Standards III'), which has not always been sufficiently transparent to the other concerning parties. Although the WFD, just as political Devolution, is promoted as heralding 'new politics' of democratic recovery via a more open approach to public matters, the actual practices of governing the environment continue to owe more to traditional rationalities of centralized managerialism (cf. Thompson, 2006; see also Dunion, 2003). A clear manifestation of such rationalities is the exacerbated role played by environmental economics in the implementation of the WFD in Scotland, as examined in the next section, *Exacerbation of the Economic Dimension of Water Use*.

EXACERBATION OF THE ECONOMIC DIMENSION OF WATER USE

One of the key policy instruments of the WFD regime is the requirement of all water users to make a payment equivalent to the environmental impact they create (normally described as the 'polluter-pays' or 'user-pays' principle; cf. Morris, 2007). The compensation for the negative impacts on the environment takes the form of 'bulk water charges' to be paid regularly to the regulatory agency (SEPA, in the case of Scotland). According to the literature on environmental economics that underpins most of the new institutional arrangement, bulk charges serve to internalize the social costs (i.e. negative externalities) of using the environment for private benefits (Morris, 2007), thereby introducing an economic rationality that stimulates the efficient and sustainable use of water (Dellapenna, 2000). In Scotland, the income from the new charges was expected to cover 50% of the operational costs incurred by SEPA, while the other 50% was to

come from the government in the form of general taxation (SEPA, 2005b).[8] Charges are allocated according to a set of criteria that estimate the risk posed by the water user to the environment (following the spirit of the 'polluter/user-pays principle', in the sense that activities with more impact should incur higher charges). The introduction of the WFD charges was the object of two specific public consultations carried out by the Scottish Government in the year 2005. The first dealt with charges to be applied during the initial phase of issuing the WFD licences (described as the 'transition period' of 2005/2006) and only received 17 responses (basically, green NGOs, such as the World Wide Fund for Nature and the Royal Society for the Protection of Birds), were in favour of expanding water use charges, while the main user sectors were against or expressed their apprehension about the new charging mechanism). The second consultation in 2005 dealt with the full-charging scheme (i.e. to be in place after the transition period) and attracted 189 responses.[9] The second consultation took place simultaneously with the beginning of applications for the new WFD authorisations, which only added animosity to an already contested process.

To understand the meaning of bulk water charges in the Scottish experience, it is important to consider that instead of facilitating the implementation of water reforms the principle of cost recovery has entangled SEPA in a hostile environment of lobbying and public disapproval that corresponded to the most turbulent period of the WFD regime to date. An illustration of the widespread controversy associated with the introduction of the WFD charges in Scotland is provided in Table 1. SEPA was seen, particularly in the mass media, as a draconian agency that was trying to 'sell' the new regulation to secure its financial survival. This opinion was frequently repeated by individual stakeholders, especially those who were required to apply for a WFD authorisation to maintain current uses of water. Under serious criticism, SEPA had to quickly respond via a number of unscheduled meetings and ad hoc negotiations with water user sectors. The hurried amendments to the abstraction charges, during and after the consultation, "demonstrate the value of lobbying" and also the "concern that abstraction charges have caused among farmers and large users" (Hendry, 2006).[10] SEPA actually had to make several concessions during the development of the charging scheme, which will probably come to haunt the agency in the future. For example, the agency was forced to include several technical indices in the calculation of charges, which can now be challenged by the user sectors; likewise, the 'elastic' definition of abstraction points, which for irrigators can extend for many miles and can overlap with other water users, will be a likely source of conflict between farmers (e.g. the majority of potato growers rotate their equipment across different catchments and are likely to compete for the same stocks of water in the years when the areas of production coincide in the same catchment).[11]

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[8] SEPA costs with the WFD, in 2006-2007, totalized £17.8 millions, split between £1.6 million in applications for new operator authorisations and £16.2 millions in authorisation subsistence fees (Scottish Executive, 2006).

[9] "Analysis of responses to the consultation paper on the proposed Water Environment (Transitional) Charging Scheme" and "Summary and Analysis of responses to the consultation on the proposed Water Environment (Controlled Activities) Fees and Charges Scheme 2006", at www.sepa.org.uk/consultation/closed.htm (accessed on 30 October 2007).

[10] In an attempt to remove political resistance, SEPA had to amend the proposed calculation of bulk water charges, which added complexity to an already very unpopular charging scheme. For instance, the annual charge applied to water abstraction is determined by taking into account eight different factors: volume, return rate, river length affected, water source, seasonality, proportion of river flow, number of abstractions and a financial factor, cf. Water Environment (Controlled Activities) Fees and Charges (Scotland) Scheme, 2006.

[11] SEPA has promised that water scarce situations will be handled through 'water management strategies', which are a form of coordination amongst abstractors; however, it is not clear how situations of conflict will be sorted out, or how some water licences will be prioritized.

Table 1. Public complaints about the introduction of water charges.

The farming sector in Scotland stated that "few issues have generated as much heat and discussion with SEPA and the Scottish Executive as the new charges for regulating farms that abstract water. The Union has continued to press for a clear explanation as to the public benefits of the charging scheme" (NFUS, 2006).
[The President of the National Farmers Union, Scotland, argued that] "(…) our regulatory system has spun out of control as farms face a continual increase in red tape and massive associated charges. Yet there is little evidence or explanation of the reasons why or the benefits" (The Scotsman, 2006).
"Overall the [Highland] Council's concern is that the proposed charging scheme would have a significant and disproportionate effect on the Council's capital and maintenance budgets, and also add significantly to the administrative burden on the Council" (Transport, Environmental and Community Services Committee, The Highland Council, 17 August 2006).
"Because of the new complex Licence (licences issued by SEPA can either be simple or complex) rate the Scottish Executive has put in place within the Controlled Activities Regulations structure, hydro schemes in Scotland are facing licence application charges at the same rate whether they are 100 kW or 100 MW in size. (…) the WFD will create project uncertainty which could jeopardize securing finance. Because the WFD is reviewed every six years, scheme operators are concerned that new schemes that are viable and acceptable under the legislation will become uneconomic after subsequent review. (…) Given preparatory work by SEPA for implementing the legislation, we are far from sure that local and global environmental considerations are being correctly balanced" (Scottish Renewables Briefing, April 2006).
"There will be some cost attached to water users. However, these costs must be seen in perspective. Scotland has an obligation to ensure adequate protection of all waters and their ecology. If the WFD provisions are implemented poorly, the costs to the society, industries and the environment will be great. The economic and environmental gains of properly implementing the Directive far outweigh the costs of its implementation" (Controlled Activities Regulations Proposals for Regulation, A Policy Statement from the LINK Freshwater Taskforce, May 2005).
"Both the whisky industry and bottled water producers were anxious about the potential effects of the implementation of the WFD in Scotland. The SWA (Scottish Whisky Association) was concerned that increased costs following the introduction of the WFD could potentially threaten marginal distilleries. They were also concerned that the WFD was only one part of a wider set of controls, the cumulative impact of which may adversely affect the competitive position of whisky. (…) The British Soft Drinks Association (BSDA) was worried that any licencing regime for water abstraction might be the result of 'bureaucratic rather than environmental reasons'. (…) There is a view in the UK, rightly or wrongly, that this country responds with alacrity to the requirements of European directives and obeys the letter of the law, while other EU states are a little more self-interested or piecemeal" (Select Committee on Scottish Affairs, House of Commons, November 2001).

Because of the fierce controversy around bulk water charges (which was probably inevitable, given that hitherto, water use was often a free right attached to land ownership; cf. Allan, 2003), the initial implementation of the WFD in Scotland has been primarily associated with the economic dimension of water, at the expense of other initiatives more directly related to the mitigation of environmental and social problems. Although the payment of charges for water use is obviously part of the new regulatory regime, to a large extent it has become an objective in itself, particularly because the activities of the environmental regulator depend on the successful collection of those charges. In conceptual terms, it means that environmental objectives attached to payments became increasingly subordinated to the financial sustainability of SEPA. This is even more serious considering that the entirety of the water charges is used to finance (half) of the regulatory costs of the agency to oversee the implementation of the WFD. Unlike the water charges of other countries, such as France, where the income is reinvested into the improvement of the water environment, the charging scheme in Scotland represents a significant deviation from the objectives of applying the polluter-pays principle. At the same time as the new charges in Scotland not being directly related to investments in environmental restoration, they also have the negative

consequence of reducing the multiplicity of social and natural values of water to the single dimension of money value.

Among the various user sectors, the public water industry is probably the one that reflects this gradual commoditisation of water most clearly. As mentioned above, in 2002, the consolidation in a single utility company (Scottish Water) was presented as the best operational alternative to avoid the persistent financial losses of the then three water companies. Continuous losses had then put the market value of the Scottish water industry at least £500 million less than its outstanding debt (WIC, 2007). Since the reorganisation, Scottish Water has recovered its regulatory capital value,[12] after having invested £413 million and achieved cost savings of more than £1 billion (Scottish Water, 2005, 2007). Not only is its management increasingly driven by an economic rationale, but the public image of Scottish Water has also been dominated by pressures to reduce costs and improve performance. Additional legislation, such as the Water Services Scotland Act 2005, required Scottish Water to establish a separate retail entity to compete on a level playing the field with other new entrants in the water services market (WIC, 2007). Under mounting pressure, the company moved beyond its solely governmental status and created a new commercial branch – Scottish Water Solutions – a joint venture between Scottish Water (51% of shares) and two consortiums of engineering and private water companies (24.5% of shares each). Scottish Water Solutions was required to deliver 2500 projects estimated at £2.3 billion with a budget of only £1.81 billion (in other words, deliver more with less money). However, these financial savings are not immune to criticism, especially considering that the selection of investment priorities is largely subject to political and commercial pressures. In effect, interventions have been concentrated in locations and catchments where there are higher commercial results for the companies that form Scottish Water Solutions or where the achievement of targets is relatively easier. The use of 'rational' analytical tools to select and justify positioned water management decisions is certainly not new (see Ingram, 1972), but the emphasis on this kind of approach has encouraged the subordination of the institutional water reforms to commercial targets and business strategies.

Another aspect of the controversial exacerbation of the economic dimension of water is related to disputes about the costs of mitigating environmental impacts. The WFD is, by definition, a 'framework' type of legislation, which means that it systematizes the direction that European countries should follow, while details of the application are delegated to the national administrations. Within reasonable technical boundaries, member countries can interpret the requirements of the Directive in order to restore water bodies to 'good ecological status'. If the current condition deviates from a good status, a series of measures must be put in place to guarantee environmental restoration by 2015. To inform the achievement of 'good ecological status' in Scotland, a series of publications have tried to calculate the monetary value of environmental conservation and the cost of restoration (e.g. CJC Consulting, 2002; ENTEC, 2004; Hanley et al., 2006; Lago et al., 2006; MacLeod et al., 2006; Moran and Dann, 2008).[13] Crucially, under the WFD the regulator can only impose mitigation measures that are ‘feasible’ and 'proportionate'. The financial costs associated to environmental compliance can be avoided, or at least minimized, if the activity is considered eligible for ‘derogation’ (cf. Article 4 of the WFD; see European Commission, 2000). Activities that cause serious environmental impacts can lawfully continue to operate on grounds of disproportionate costs, public interest, or sustainable development goals (i.e. the criteria for derogation).

[12] Regulatory capital value is a measure of the value placed on the capital invested in the company (in other words, it is the market evaluation of the company, including assets and debts).

[13] These publications have in common the use of environmental economic methodologies (e.g. contingent valuation methods) that permeate the entire WFD regime and betray the influence of neoclassical economics over contemporary environmental policies.

At the same time as the mechanism of derogation, if not well used, can undermine the rigour of the new regulatory regime, it was sometimes manipulated by SEPA as an appeasement strategy to remove opposition to the translation of the WFD into Scottish legislation: in the early days of implementation of the WFD, some SEPA representatives tried to persuade antagonistic voices to accept the new regulation, provided that the really decisive phase would only come later, with the assessment of environmental risks and the appraisal of derogations (which would be managed by the agency anyway…). In many instances, SEPA is now politically and morally constrained to disregard some onerous mitigation options and should concentrate on a relatively small number of 'cost-effective' (i.e. probably less stringent) alternatives.

Arguments about the reasonableness of restoration costs continue to poison the dialogue between water stakeholders and the environmental regulator. In such situations of conflict, economic assessments are often used to protect established interests, such as the expansion of hydropower generation (incidentally, Moran et al., 2007, project an increase in freshwater use by 39% between 2001 and 2015, primarily driven by hydropower generation). A concrete example is the dispute about the 13 miles of the river Gary (central Scotland) that lies dry most of the year because water is held back by a hydroelectricity dam. Environmental economists compared the cost of power generation with the marginal benefit of increased revenues from fisheries and concluded that the 'social' costs of reducing electricity are disproportionately high in relation to the value of fish preservation (cf. Hanley and Black, 2006). The local fisheries board obviously disagrees and continues to claim that the river Gary is "Scotland's most abused river" and that the "electricity produced by the Tummel-Garry (hydropower) scheme was intended for sale to the towns and cities in lowland Scotland as opposed to Highland communities".[14] This is in sheer contrast with the position of the hydropower company manager, who in a television programme made extensive use of the utilitarian expression "balancing water needs between the environmental and the generation of renewable energy" as an (economic) excuse for the maintenance of hydropower operation in the area (Landward, BBC2, 23 November 2007).[15]

DISCUSSION: THE INHERENT LIMITS OF THE WATER REFORMS

The above paragraphs identified some fundamental shortcomings of the experience with the WFD in Scotland in the period 2002-2008. While the analysis concentrated on the limitations of the new regulation, it must be acknowledged that the reform of the legal framework has been significant in itself (i.e. the shift from court-based decisions to administrative decisions regarding disputed water rights), in the sense that hitherto only a largely unfettered common law regime (with some exceptions) existed in Scotland, with very little constraints under the law. It should also be mentioned that the Scottish experience also comprises a number of cases where the interaction between private stakeholders and the public sector was more balanced and transparent than the average (such as the support to the development of catchment plans of the Dee and Tweed rivers, and the attempt to discuss the new regulation with irrigators in some small catchments along the east coast in 2004 and 2005). These isolated initiatives were, however, exceptions. On the whole, it seems that an outstanding opportunity to promote a new paradigm of water regulation is being largely missed. Instead of implementing the WFD

[14] Tay District Salmon Fisheries Board, at www.tdsfb.org (accessed on 03 December 2007).

[15] In 2007, SEPA began to recognize the political and methodological difficulties of quantifying the monetary value of the water environment more formally. The recent discussions in the Area Advisory Groups indicate that SEPA is now moving its language away from costs and benefits to more qualitative 'options appraisal'. The Agency has been forced to acknowledge that around one third of water bodies may not achieve good status by 2015 with existing measures and those that might easily be implemented (ENDS Report, 2007).

through innovative forms of dialogue and cooperation, as claimed in numerous policy documents, the new water regulation has followed the conventional top-down model of environmental management that prevails in most countries. Since its early days, different authors indicated the existence of serious obstacles for the success of the WFD in Scotland (e.g. lack of regulatory authority and enforcement resources; cf. Warren, 2002); only a few years later, it is already possible to identify a broadening gap between the ambitious rhetoric and the narrow reality of the new water regulation. In effect, several stakeholders contacted during this research (particularly those involved in the preparation of the River Basin Management Plans) have voiced their increasing frustration with the repetition of old practices and mistakes of previous environmental regulations.

At face value, the range of events, reports, consultations and media coverage concerning implementation of the WFD in Scotland may give the impression of an ample reform. It seems that long-term management problems, such as degraded river stretches, obstruction of rivers by large dams, low river flow during dry summers, and declining fish population, will be finally resolved; or that the government is employing economic incentives, including fees and taxes, to manage water systems according to broader public priorities that are widely discussed with the population. However, a more careful analysis reveals the superficial level of change and the overambitious rhetoric of the WFD. It becomes clear that the actual methods of assessing problems and formulating solutions have mostly reproduced the patchy responses that existed before the WFD. What is more, the timid scope of the ongoing water reforms in Scotland has eroded the prospects of effectively improving the use and conservation of water. For instance, despite all the controversy around the new charging scheme, it basically aims to recover the operational costs of SEPA rather than the internalisation of the social costs of water use: to many who took part in the public consultations and protested in the media, the WFD regime has been focused on imposing fees and taxes too much rather than on environmental conservation.

The growing frustration of water stakeholders with the WFD in Scotland certainly echoes the contested nature of the international experience with environmental governance. What is peculiar to the Scottish experience, though, is the fact that, because of the reconfiguration of Scottish public affairs, public involvement and economic-based regulation have evolved through the unique circumstances created by Devolution. The reform of water institutions in Scotland provided an invaluable opportunity to understand the connections between territorial politics, environmental vulnerability, and economic pressures. The WFD is a legal requirement of the European Union that has been opportunistically transformed into a compelling argument in favour of the benefits of the self-government of Scotland. Nonetheless, regionalist pressures, such as Devolution, are part of a new scale of state power that mostly aims at rescaling, instead of resolving, economic deficits (Jones, 2001). In the case of the WFD, the political construction of Devolution has triggered an asymmetric territorialisation of water policies within Scotland and between different parts of the United Kingdom, and has also exacerbated the economic dimension of water use. While most user sectors (agriculture is the exception) are likely to increase their use of water significantly during the implementation of the WFD (cf. Moran et al. 2007), the new regulation has been incapable of dealing with the close relationship between poor water quality and social deprivation in other marginalized areas, such as the suburbs of Glasgow (Fairburn et al., 2005; see also Lucas et al., 2004).[16] The hidden disputes and unfulfilled promises of the new water regime also

[16] According to Fairburn et al. (2005: 121), there are more deprived social groups living within a shorter distance of poor quality rivers (classes C and D, the worst situations) than wealthier groups, which indicates an obvious problem of environmental injustice in Scotland. It should be noted that social "poverty in Scotland relates both to post-industrialism in rural and urban areas

reflect the fact that the large water users and the environmental regulator are writing the story lines of water reforms in Scotland (see Hendry, 2006). At the same time, the independence of the regulator is constantly challenged by the pressure exerted by political party leaders, private consultants and, more importantly, the representation of the stronger user sectors.

The reliance on the generic assessment of ecological processes and the quick-fix solution to long-term environmental impacts betrays the technocratic basis of the new water institutions. As pointed out by Frodeman (2006), a large part of current environmental policies embody positivist and procedural biases "in that it seeks to rationalize and make more efficient the *expression* of our values, while abstaining from the project of making these values themselves more reasonable". Because of its technocratic heritage, the key outcomes of the WFD experience have been an artificial (and mostly unnecessary) complexification of water management and the widespread use of the money language: the dominant forms of dealing with water remain bounded by economic assumptions about how nature operates and how natural resources should be used. The 'cash nexus' (cf. Foster, 2002) inevitably results in the exacerbation of the economic dimension of managed water systems, at the expense of other social and cultural characteristics, despite the fact that there is no empirical evidence that monetisation improves environmental management (Burkett, 2003). On the whole, the failure to articulate alternatives has left water reforms in Scotland exposed to the neoliberalisation of public policies that ultimately constitutes the fabric of contemporary approaches to environmental problems (McCarthy and Prudham, 2004). Because of the powerful influence of neoliberalism, the new regulatory regime may be capable of acknowledging complexity and sectoral difference, but it is reticent when it comes to allocating responsibilities for environmental impacts. The standard assessment of environmental impacts effectively dilutes the responsibility for the genuinely serious damages, inasmuch as it basically deals with the most common impacts and only resorts to a limited range of mitigation responses. Such a conclusion should not come as a surprise, since it is a characteristic of neoclassical economics, strongly related to the WFD experience, to say little about the evaluation of past mistakes in relation to the environment (Söderbaum, 2000).

Overall, the two strongest institutions advanced by the WFD, namely 'the search for economic efficiency' and 'the involvement of the public', have not produced fundamental changes in the forms of using and conserving water in Scotland (albeit that it may be seen as better than the pre-existing largely unregulated nature of abstraction of water under the common law). Although some localized and patchy improvements are expected as a result of the WFD, the introduction of an economic-based regulation will continue to raise conflicts and contradictions (as in the case about deciding derogations). This is due to both the WFD being entangled in multileveled disputes and, more importantly, the WFD being in itself a very limited piece of regulation that, despite its formal requirements, has perpetuated an uneven and centralized management of water use and conservation (Allan (2003) notes that "for all practical purposes, the use of water in Scotland is centrally controlled"). It is wise to remember the observations by Ost (1997) about the conventional development of new environmental regulation: the formulation of an extensive mechanism of control and enforcement produces little more than a bureaucratic, ineffective apparatus that looks like a 'state-show' (i.e. a state that fruitlessly attempts to satisfy conflicting interests). The whole process can be compared to a 'tapestry of Penelope': what is produced during the day is undone during the night…

The shortcomings of the water regulation reform in Scotland indicate a pressing need for deeper changes in the use and conservation of water systems, which should be strongly

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and also the pre-industrial history of the concentration of power in rural areas with their unequal distribution of land ownership" (Todd and Zografos, 2005).

grounded on principles of environmental justice and positioned beyond standardized solutions to water management problems. First and foremost, it is important to accept that the political dimension of the WFD reforms and the contested basis of water policy-making are permanent elements of water management institutions (i.e. water scarcity, pollution and flooding events unevenly affect different groups and spatial areas, which in turn have differentiated possibilities to react and influence policy-making). Because of the intrinsic politicisation of water management, effective answers to old and new problems depend on more inclusive decision-making and a schedule of discussions and negotiation more realistic than the rigid and predetermined timetable of the WFD. By the same token, public policies should avoid positivistic or technocratic approaches to water management problems and recognize the full extent of the complex relationship between nature and society. In particular, it will be necessary to have a more open debate about the limits of scientific assessments and the inevitable uncertainties that underpin technical statements. It is important that scientists also include the social causes of environmental degradation in their 'models and assessments', especially the long legacy of past interventions such as hydropower and water storage dams. Finally, it is not possible to think about institutional reforms divorced from broader issues of commodity production and consumption, but water management demands need to be coherently integrated into regional planning and national socio-economic policies. On the whole, a truly sustainable management of water cannot be reconciled with a centralized and narrow institutional solution to water problems, such as has been the case with the Water Framework Directive thus far. Unlike in the pay of Pirandello (1984), the characters still have to invade the stage and insist on being given life and being allowed to tell their own story.

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BIBLIOGRAPHY

Allan, A. 2003. A comparison between the water law reforms in South Africa and Scotland: Can a generic national water law model be developed from these examples? *Natural Resources Journal* 43(2): 419-484.

Bakker, K. 2002. From state to market? Water mercantilización in Spain. *Environment and Planning A* 34(5): 767-790.

Beveridge, C. and Turnbull, R. 1997. *Scotland after Enlightenment*. Edinburgh: Polygon.

Blomquist, W. and Schlager E. 2005. Political pitfalls of integrated watershed management. *Society & Natural Resources* 18(2): 101-117.

Bradbury, J. and Mitchell, J. 2005. Devolution: Between governance and territorial Politics. *Parliamentary Affairs* 58(2): 287-302.

Burkett, P. 2003. Natural capital, ecological economics, and Marxism. *International Paper in Political Economy* 10, number 3. Leeds: University of Leeds.

CJC Consulting, 2002. *Evaluating the economic impact of abstraction controls on high and medium volume water users in Scotland*. Report for the Scottish Executive Environment and Rural Affairs Department Water Environment Unit. CJC Consulting, with The Macaulay Institute.

Clark, B. 2006. Water use reform in Scotland: A critical analysis. *Journal of Environmental Law* 18(3): 375-406.

Conca, K. 2006. *Governing water: Contentions transnational politics and global institution building*. Cambridge, Mass. and London: MIT Press.

Cumbers, A.; MacKinnon, D. and McMaster, R. 2003. Institutions, power and space: Assessing the limits to institutionalism in economic geography. *European Urban and Regional Studies* 10(4): 325-342.

Dalrymple, G. 2006. Valuing the water environment: A review of international literature. Edinburgh: Scottish Executive.

Danson, M. 1999. Economic development: The Scottish Parliament and the development agencies. In McCarthy, J. and Newlands, D. (Eds), *Governing Scotland: Problems and Prospects*, pp. 87-101. Aldershot, UK: Ashgate.

Danson, M. and Gilmore, K. 2000. Devolution and the political economy of Scotland. In Wright, A. (Ed), *Scotland: Challenge of Devolution*, pp. 217-232. Aldershot, UK: Ashgate.

Dellapenna, J.W. 2000. The importance of getting names right: The myth of markets for water. *William & Mary Environmental Law and Policy Review* 25: 317-368. doi: 10.2139/ssrn.10.2139/ssrn.272670

Dunion, K. 2003. *Troublemakers: The Struggle for Environmental Justice in Scotland*. Edinburgh: Edinburgh University Press.

Dunion, K. and Scandrett, E. 2003. The campaign for environmental justice in Scotland as a response to poverty in a northern nation. In Agyeman, J.; Bullard, R.D. and Evans, B. (Eds), *Just Sustainabilities: Development in an Unequal World*, pp. 311-322. London: Earthscan.

ENDS Report. 2007. Scotland identifies key water impacts. Issue 393: 45.

ENTEC (Environmental and Engineering Consultancy). 2004. *Valuing water use in Scotland and Northern Ireland for WFD implementation purposes*. Final report – Project WFD18. Edinburgh: SNIFFER (Scottish and Northern Ireland Forum for Environmental Research).

European Commission. 2000. *Directive 2000/60/EC of the European Parliament and of the Council of 23rd October 2000 establishing a framework for Community action in the field of water policy*. Official Journal 22 December L 327/1. Brussels: European Commission.

Fairburn, J.; Walker, G. and Smith, G. 2005. *Investigating environmental justice in Scotland: Links between measures of environmental quality and social deprivation*. Edinburgh: SNIFFER (Scottish and Northern Ireland Forum for Environmental Research).

Foster, J. B. 2002. *Ecology against Capitalism*. New York: Monthly Review Press.

Frodeman, R. 2006. The policy turn in environmental policy. *Environmental Ethics* 28(1): 3-20.

Futter, M.; Hyder, C. and Johnson, A. 2006. Implementing the requirements of the Water Framework Directive for rural water supply schemes in Scotland. *Water and Environment Journal* 20(3): 150-158.

Gripaios, P. and Bishop, P. 2005. Spatial inequalities in UK GDP per head: The role of private and public services. *Service Industries Journal* 25(8): 945-958.

Hanley, N. and Black, A. 2006. Cost-benefit analysis and the Water Framework Directive in Scotland. *Integrated Environmental Assessment and Management* 2(2): 156-165.

Hanley, N.; Colombo, S.; Tinch, D.; Black, A. and Aftab, A. 2006. Estimating the benefits of water quality improvements under the Water Framework Directive: Are benefits transferable? *European Review of Agricultural Economics* 33(3): 391–413.

Hendry, S. 2006. Water resource protection in Scotland under the Water Framework Directive. Paper presented at Taller de Investigación an Agua Y Gobernabilidad. Federación Española de Ingeniería Sin Fronteras. Barcelona, 16 November 2006.

Hodgson, G.M. 2006. What are institutions? *Journal of Economic Issues* 40(1): 1-25.

Ingram, H. 1972. The changing decision rules in the politics of water development. *Water Resources Bulletin* 8(6): 1177-1188. doi: 10.1111/j.1752-1688.1972.tb05260.x

Ison, R. and Watson, D. 2007. Illuminating the possibilities for social learning in the management of Scotland's water. *Ecology and Society* 12(1): 21, www.ecologyandsociety.org/vol12/iss1/art21/

Jessop, B. 2001. Institutional re(turns) and the strategic-relational approach. *Environment and Planning A* 33(7): 1213-1235.

Johnson, A.K.L.; Shrubsole, D. and Merrin M. 1996. Integrated Catchment Management in northern Australia: From concept to implementation. *Land Use Policy* 13(4): 303-316.

Jones, M. 2001. The rise of the regional state in economic governance: 'Partnerships for prosperity' or new scales of state power?" *Environment and Planning A* 33(7): 1185–1211.

Jordan, A. 2000. The politics of multilevel environmental governance: Subsidiarity and environmental policy in the European Union. *Environment and Planning A* 32(7): 1307-1324.

Kaika, M. and Page, B. 2003. The EU Water Framework Directive: Part 1. European policy-making and the changing topography of lobbying. *European Environment* 13(6): 314-327. doi: 10.1002/eet.331

Kallis, G. and Butler, D. 2001. The EU Water Framework Directive: Measures and implications. *Water Policy* 3(2): 125-142.

Kastens, B. and Newig, J. 2007. The Water Framework Directive and agricultural nitrate pollution: will great expectations in Brussels be dashed in Lower Saxony? *European Environment* 17(4): 231-246.

Keating, M. 2002. Devolution and public policy in the United Kingdom: Divergence or convergence? In Adams, J. and Robinson, P. (Eds), *Devolution in Practice: Public Policy Differences within the UK,* pp. 3-21. London: ESRC (Economic and Social Research Council)/IPPR (Institute for Public Policy Research).

Keating, M. 2005. *The Government of Scotland: Public Policy Making after Devolution*. Edinburgh: Edinburgh University Press.

Lago, M.; Moran, D. and MacLeod, M. 2006. *Exploring the meaning of disproportionate costs for the practical implementation of the Water Framework Directive*. Land Economy Working Paper No. 20. Edinburgh: Scottish Agriculture College.

Lemos, M.C. and Agrawal, A. 2006. Environmental governance. *Annual Review of Environment and Resources* 31, 297-325. doi: 10.1146/annurev.energy.31.042605.135621

Loftus, A. 2006. Reification and the dictatorship of the water meter. *Antipode* 38(5): 1023-1045.

Lucas, K.; Walker, G.; Eames, M.; Fay, H. and Poustie, M. 2004. *Environment and social justice: Rapid research and evidence review*. London: Policy Studies Institute.

MacLeod, M.; Moran, D. and Spencer, I. 2006. Counting the cost of water use in hydroelectric generation in Scotland. *Energy Policy* 34(15): 2048–2059.

Martin, C. 2006. *Valuing the water environment: A survey of Scottish public attitudes*. Edinburgh: Scottish Executive.

McCarthy, J. and Prudham, S. 2004. Neoliberal nature and the nature of neoliberalism. *Geoforum* 35(3): 275-283.

McCrone, D. 2001. *Understanding Scotland: The Sociology of a Nation*. 2nd edition. London and New York: Routledge.

McCulloch, C.S. 2006. Transparency: aid or obstacle to effective defence of vulnerable environments from reservoir construction? Dam decisions and democracy in North East England. *Area* 38(1): 24-33.

McCulloch, C. S. and Ioris, A.A.R. 2007. Putting politics into IWRM. Paper presented at General Assembly of the European Geosciences Union. Geophysical Research Abstracts, Vol. 9, 02981, 2007. Vienna, 15-20 April 2007.

Molle, F. 2007. Scales and power in river basin management: The Chao Phraya River in Thailand. *The Geographical Journal* 173(4): 358-373.

Mollinga, P.P. 2008. Water, politics and development: Framing a political sociology of water resources management. *Water Alternatives* 1(1): 7-23.

Mollinga, P.P. and Bolding, A. (Eds). 2004. *The Politics of Irrigation Reform. Contested Policy Formulation and Implementation in Asia, Africa and Latin America*. Global Environmental Governance series. Aldershot, UK: Ashgate.

Moran, D.; MacLeod, M.; McVittie, A.; Lago, M. and Oglethorpe, D. 2007. Dynamics of water use in Scotland. *Water and Environment Journal* 21(4): 241–251.

Moran, D. and Dann, S. 2008. The economic value of water use: Implications for implementing the Water Framework Directive in Scotland. *Journal of Environmental Management* 87(3): 484-496. doi: 10.1016/j.jenvman.2007.01.043.

Morris J. 2007. Water policy, economics and the EU Water Framework Directive. In Pretty, J.; Ball, A.; Benton, T.; Guivant, J.; Lee, D.R.; Orr, D.; Pfeffer, M. and Ward, H.D. (Eds), *The SAGE Handbook of Environment and Society*, pp. 191-205. London: SAGE.

Morris, C.T. and Morris, R.M. 2005. The Ythan Project: A case study on improving catchment management through community involvement. *Journal of Environmental Planning and Management* 48(3): 413-429.

Murray, L. and Myant, K. 2006. *Valuing the Water Environment: An investigation of environmental attitudes and values to inform implementation of the EC Water Framework Directive.* Edinburgh: Scottish Executive.

NFUS (National Farmers Union, Scotland) 2006. *Annual Report*. Newbridge: NFU Scotland.

Ost, F. 1997. La crise écologique : vers un nouveau paradigme ? La contribution d'un juriste à la pensée du lien et de la limite. In Larrère C. and Larrère R. (Eds), *La Crise Environnementale*, pp. 39-55. Paris: INRA éditions.

Paavola, J. 2007. Institutions and environmental governance: A reconceptualization. *Ecological Economics* 63(1): 93-103.

Page, B. and Kaika, M. 2003. The EU Water Framework Directive: Part 2. Policy innovation and the shifting choreography of governance. *European Environment* 13(6): 328-343. doi: 10.1002/eet.332

Paterson, L. 1994. *The Autonomy of Modern Scotland.* Edinburgh: Edinburgh University Press.

Pirandello, L. 1984. *Sei Personaggi in Cerca d'Autore*. Milano: Arnoldo Mondadori.

Potter, C. and Tilzey, M. 2007. Agricultural multifunctionality, environmental sustainability and the WTO. *Geoforum* 38(6): 1290-1303.

Saleth, R.M. and Dinar, A. 2005. Water institutional reforms: Theory and practice. *Water Policy* 7(1): 1-19.

Scottish Executive. 2002. *Public Attitudes to the Environment in Scotland* (computer file). Colchester, Essex: UK Data Archive.

Scottish Executive. 2006. *Implementation of the Water Environment and Water Services (Scotland) Act 2003*. Annual Report to the Scottish Parliament – 2006. Edinburgh: Scottish Executive.

Scottish Executive News Release. 1998. Scotland poised for new age of enlightenment. News Release number 1107/98, 29 May 1998. http://openscotland.gov.uk/News/Releases/1998/05/dac40a51-5e0a-486b-b10b-cc091c0dcaea (accessed 21 November 2007).

Scottish Government. 2008. *Implementation of the Water Environment and Water Services (Scotland) Act 2003: Annual Report to the Scottish Parliament – 2007*. Edinburgh: Scottish Government.

Scottish Water. 2005. *Annual Report & Accounts 2004/2005*. Dunfermline: Scottish Water.

Scottish Water. 2007. *Annual Report & Accounts 2006/2007*. Dunfermline: Scottish Water.

SEPA (Scottish Environment Protection Agency). 2005a. *Scotland River Basin District*. Stirling: SEPA.

SEPA (Scottish Environment Protection Agency). 2005b. *Consultation on the Water Environment Charging Scheme 2006. Levels of Authorisation for Controlled Activities*. Stirling: SEPA.

SEPA (Scottish Environment Protection Agency). 2007. *Significant Water Management Issues in the Scotland River Basin District.* Stirling: SEPA.

SEPA (Scottish Environment Protection Agency) and EA (Environment Agency). 2005. *Solway Tweed River Basin District*. Stirling: SEPA and the Environment Agency.

SEPA (Scottish Environment Protection Agency) and EA (Environment Agency). 2007. *An Interim Overview of the Significant Water Management Issues in the Solway Tweed River Basin District*. Stirling: SEPA and the Environment Agency.

Sherlock, K.L.; Kirk, E.A. and Reeves, A.D. 2004. Just the usual suspects? Partnerships and environmental regulation. *Environment and Planning C* 22(5): 651-666.

Smith, N. 2007. Nature as accumulation strategy. In Panitch, L. and Leys, C. (Eds), *Socialist Register: Coming to Terms with Nature,* pp. 16-36. London: Merlin Press.

Sneddon, C. and Fox, C. 2006. Rethinking transboundary waters: A critical hydropolitics of the Mekong Basin. *Political Geography* 25(2): 181-202.

Söderbaum, S. 2000. *Ecological Economics: A Political Economics Approach to Environment and Development*. London: Earthscan.

Steyaert, P. and Ollivier, G. 2007. The European Water Framework Directive: How ecological assumptions frame technical and social change. *Ecology and Society* 12(1): 25, www.ecologyandsociety.org/vol12/iss1/art25/

Swyngedouw, E. 2004. *Social Power and the Urbanization of Water: Flows of Power*. Oxford: Oxford Geographical and Environmental Studies.

The Scotsman. 2006. NFUS declares war on red tape. 25 July 2006. http://business.scotsman.com/agriculture.cfm?id=1077172006 (accessed 30 October 2007).

Thompson, N. 2006. The practice of government in a devolved Scotland: The case of the designation of the Cairngorms National Park. *Environment and Planning C* 24(3): 459-472.

Todd, H. and Zografos, C. 2005. Justice for the environment: Developing a set of indicators of environmental justice for Scotland. *Environmental Values* 14(4): 483–501.

Warner, J. 2005. Multi-stakeholder platforms: Integrating society in water resource management. *Ambiente & Sociedade* 8(2): 1-20.

Warren, C. 2002. *Managing Scotland's Environment*. Edinburgh: Edinburgh University Press.

WIC (Water Industry Commission for Scotland). 2007. *Strategic Review of Charges 2010–14: Methodology. Volume 1: Financing & Governance of Scottish Water.* Stirling: Water Industry Commission for Scotland.